

RECEIVED
CENTRAL FAX CENTER

JUN 19 2007

Claim Listing

What I claim is:

1. (amended) A digital transmission system comprising:
 - a. a transmitter transmitting a transmit symbol sequence that has been created by multiplying an input symbol sequence by a transmission matrix, said transmission matrix being comprised of non-orthogonal basis functions;
 - b. a signal path,
 - c. a receiver receiving a received symbol sequence, and
 - d. a processing element multiplying the received symbol sequence by a recovery matrix, said recovery matrix is an inverse of the transmission matrix, whereby an output symbol sequence is produced.
2. (amended) A digital transmission system according to claim 1, wherein the transmission matrix is square and ~~the recovery matrix is the inverse of the transmission matrix.~~
3. (amended) A digital transmission system comprising:
 - a. a transmitter transmitting a transmit symbol sequence that has been created by multiplying an input symbol sequence by an over-determined transmission matrix, said transmission matrix being comprised of non-orthogonal basis functions;
 - b. a signal path,
 - c. a receiver receiving a received symbol sequence, and
 - d. a processing element multiplying the received symbol sequence by a recovery matrix, said recovery matrix is a pseudo-inverse of the transmission matrix, whereby an output symbol sequence is produced.
4. (canceled) ~~A digital transmission system according to claim 3, wherein the recovery matrix is a pseudo-inverse of the transmission matrix.~~

5. (amended) A digital transmission system according to claim 3, wherein the processing element removes redundant symbols in the received symbol sequence and a recovery matrix is created from ~~an~~ the pseudo-inverse of the transmission matrix with the corresponding columns removed modified by corrupted terms in the received symbol sequence.
6. (amended) A digital transmission system comprising:
- a transmitter transmitting a transmit symbol sequence that has been created by multiplying an input symbol sequence by a transmission matrix comprised of non-orthogonal basis functions and performing an inverse fast Fourier transform in the result;
 - a signal path,
 - a receiver receiving a received symbol sequence, and
 - a processing element performing a fast Fourier transform and multiplying the received symbol sequence by a recovery matrix, said recovery matrix is a pseudo-inverse of the transmission matrix, and performing a fast Fourier transform; whereby an output symbol sequence is produced.
7. (original) A digital transmission system according to claim 6, wherein a guard interval is added to the transmit symbol sequence.
8. (amended) A digital transmission system according to claim 6, wherein the processing element removes corrupt symbols ~~and a said recovery matrix is created from an inverse of the transmission matrix with the corresponding columns removed.~~